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Car Sharing as an Alternative to Car Ownership: Opportunities for CarSharing Organizations and Low-Income Communities

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by

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Dedication

To my amazing family and friends who have supported me these last seven years as I've traveled from Lincoln, Nebraska to Austin, Texas. Thank you for always believing in me and pushing me to continue my education.

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Abstract

Car Sharing as an Alternative to Car Ownership: Opportunities for CarSharing Organizations and Low-Income Communities

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Car sharing organizations (CSOs) have established themselves as a formal mode of transportation across the United States. These systems purport to offer their members the benefits of a private vehicle, without any of the accompanying pitfalls. Despite these benefits, low-income individuals are less likely to be a member of a CSO than higher-income individuals. This paper synthesizes the major transportation issues facing low-income individuals, explores possible opportunities between CSOs and low-income communities, and examines 7 CSOs for best practice in encouraging participation by low-income individuals. The findings show that when viewed as one piece of the transportation puzzle, CSOs can fill gaps in the transportation system and provide numerous benefits. With community partnerships, innovative solutions, and active outreach, CSOs can broaden awareness of carshare systems and facilitate increased usage among low-income individuals.

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Chapter 1: Introduction

BACKGROUND

Literature on the intersection between mobility and access to services among low-income individuals and family is extensive. Literature has focused on access to employment, access to food, health outcomes, and access to education to name a few topics. Research shows that the majority of trips in the US are made using a personal vehicle, a phenomenon true across most income levels. This however does not hold true for the lowest income level, which relies on traditional public transit, such as fixed route busses. Due to carsharing's relative newness in the United States, compared to European markets, existing literature focuses on the mechanics of carshare systems and the possibilities for future expansion. However, some recent research has focused on the possibilities for carshare organizations (CSOs) to becoming another transit mode available to low-income individuals. The literature explores the barriers and obstacles facing low-income individuals in adopting car share systems. There are opportunities for CSOs to expand into low-income communities. However, CSOs are not the only solution to low-income communities' transportation issues, they are another piece of the transportation puzzle. CSOs can provide a cheap, low-cost transportation option that fills the gaps in the current transportation system, delaying car ownership and the accompanying operating costs.

This paper will explore the barriers and obstacles facing low-income individuals in accessing reliable transit and the possibility for CSOs to addressing these needs. This paper will synthesize the existing literature and explore a number of CSOs that have outreach components geared to low-income individuals.

CONTEXT

Car-share systems have established themselves as a mode of transportation in many cities across the United States. These systems range in size from the small local non-profit/community initiated organization, to the large for-profit companies. As noted in *Connecting Low-Income People to Opportunity with Shared Mobility*, as of 2014, there were "1,228,573 carshare members in the US sharing 17,179 vehicles across 24 operators."

Access to reliable transit options (car, bus, bike, etc) has been found to affect family's access to housing, employment opportunities, healthy foods, and health outcomes (Cervero 2011; Giuliano, 2005; Clifton, 2004; Inagami et al., 2006). While access to consistent public transit can aid a low-income family, the majority of travel in the US is completed through private vehicles, even amongst low-income residents. Only individuals and families in the lowest income levels rely exclusively on public transit. However, private vehicle ownership is expensive and requires costs beyond the original purchase. These extra costs include maintenance, insurance, and gas. Ortega has shown that low-income residents on average spend 42% of their income on car ownership. These families also face the risk of an unexpected maintenance issue derailing their daily lives and schedules. This risk can compound an already precarious situation. Despite the possible benefits that membership in a carshare system may provide to low-income individuals and families, there are low-utilization rates by low-income communities. The system has the ability to provide a transportation mode that is more flexible than traditional mass transit. Car sharing can also allow low-income individuals access to a private vehicle when needed. If implemented, carshare systems need to be seen as a complement to existing mass transit, a system that can fill in gaps in the transit coverage and the larger transit network as a whole.

Car sharing systems can be divided into the standard for-profit (Zipcar & Car2Go) and non-profit (Community carshare) models. Outreach to low-income individuals and families has been a focus of some non-profit carshare systems in US cities, and as such the research will focus on those systems that have attempted to engage with and increase participation of low-income individuals. Buffalo CarShare is cited numerous times as a pioneer among community-initiated carshare systems when it comes to low-income individual participation in the system. At last count roughly 2/3 of their membership earned less than $35,000. Other systems have engaged with service providers in their cities to link low-income individuals with carshare memberships as well. Transport Network Companies (TNCs) such as Uber and Lyft are not considered in this study because they function as an "app-based chauffeur service," distinct from other share systems (Kodransky & Lewenstein, 2014).

The literature has explored some barriers and obstacles that must be resolved if low-income individuals are to have equitable access to carshare systems. One report shows that these barriers can be broadly divided into financial and structural issues. While there have been attempts to explore possible cultural dimensions, they have not engaged with these communities directly. Connected to the cultural dimension is also the perception, and possible preference, among low-income individuals for ownership versus sharing. Americans of all income-levels are encouraged to own assets (home, land, vehicle) as a form of wealth and wealth accumulation (Herbert et al. 2013). This study will explore the financial, structural, and perceptual issues before delving into best practices for facilitating low-income participation in car share systems.

RESEARCH QUESTIONS

The primary research question addressed in this study is: Are carshare vehicles a viable alternative to private vehicle ownership for low-income individuals? The goal will be to synthesize the literature discussing carsharing and the difficulties low-income individuals face. The aim is to uncover strategies and tools CSOs use in successfully reaching out to low-income individuals. An outcome of this study is to uncover best practice, strategies, and programs that can be implemented by future community-based/non-profit CSOs.

REPORT STRUCTURE

This report begins with a review of the existing literature that discusses the transportation challenges facing low-income individuals, current outreach strategies, and perceptions of ownership versus sharing follows. The following chapter provides a quick overview of CSOs for a foundational understanding. A quick discussion of the methodology used precedes the seven case studies. The case studies delve into each of the respective histories, member demographics, and outreach strategies of the individual CSOs. Information was gathered from news articles on the operation of each CSO, internal/external reports describing the details of the CSO, and an exploration of each website and respective member material. Background information on each CSOs respective city and population were gathered from the U.S. Census Bureau, the American Community Survey, and the Location Affordability Index. Each of these CSOs was contacted to provide further insight into its operations. The results of the remote interviews are integrated into the case studies, highlighting major findings. The paper ends with a broad discussion of the limitations of the paper, future research opportunities, and recommendations.

Chapter 2: Literature Review

TRANSPORTATION & LOW-INCOME INDIVIDUALS

The transportation challenges facing low-income individuals are the result of an increasingly decentralized urban environment (Blumenberg, 2004; Cervero, 2011; Garasky et al., 2006; Giuliano, 2005; Roberto, 2008; Sanchez et at., 2004,; Sanchez, 2008; Waller, 2005). Those challenges include access to employment, education, food, and healthcare, and the accompanying problems that come from inadequate access.

Majorities of people live and work in the suburbs. 70% of jobs in industries that typically have large numbers of entry-level/low wage positions are located in the suburbs (Kodransky & Lewenstein, 2014; Sanchez, 2008). This expansion of housing and jobs has not been equitably distributed across racial/ethnic and class lines. The spatial mismatch hypothesis asserts that people of color and historically disenfranchised communities are isolated from the job expansion in the suburbs as a result of housing segregation and poor transportation linkages (Covington, 2009; Holzer, 1991; Holzer et al., 2004; Kain, 1992). Additionally, there has been an increase in the number of residents living in poverty who are located in the suburbs, in a phenomenon known as the suburbanization of poverty. A result of the Great Recession and a renewed interest in center cities, those living below the poverty line are unable to afford the rising cost of housing. In 2000, the majority of those with incomes below the poverty line lived in the center cities of the US's largest metros. However, by 2008 suburbs recorded a 25% increase in the number of suburban poor, five times the increase seen in the center cities (University Transportation Research Center, 2015). This suburbanization of poverty is made worse by the poor social services available to residents outside the center cities.

Public transit systems are not capable of handling the "reverse commute" required of low-income individuals commuting between center cities and jobs in the suburbs. Neither are they capable of transporting those living in the suburbs to job opportunities in center cities. Those reliant on public transit face significant challenges because existing transit services do a poor job of connecting central cities to suburbs (Crain, 1970; Sanchez, 2008; Waller, 2005). Poor connections between suburbs and central cities diminish access to jobs, which are necessary for better employment outcomes (Cervero 2011; Giuliano, 2005). Access to transportation increases the likelihood of employment, with public transit and private vehicle use both having positive effects. (Cervero, 2011). While access to transit increases the likelihood of employment, public transit systems often fail to meet the full needs of low-income residents. This is compounded by the fact that low-income individuals are also more likely to be transit dependent. Entry level and "off-shift" jobs often require greater time flexibility than that afforded by fixed-route public transit options, which is especially true in suburban and rural environments. The hours of service and the frequency of busses rarely are conducive for the type of entry-level jobs performed by low-income individuals (Waller, 2005). Lack of access to food is also an issue. This problem is compounded, as supermarkets have grown larger and are predominantly located to serve suburban markets. Low-income residents rely on convenience stores that do not have the same quality of food available in suburban supermarkets (Clifton, 2004; Inagami et al., 2006).

Low-income households are particularly reliant on public and alternative transportation options. A survey in 1995 found that 36% of low-income parents did not have access to a vehicle, compared to less than 4% of middle and upper-income families. Even if low-income individuals own a car, the costs associated with ownership are disproportionately high for low-income families. In the United States the lowest 1/5 of

households spend 42% of their income on car ownership, double the national average. This can be the result of maintenance, insurance, and gas fees experienced by car owners (Ortega).

A majority of the focus on transportation and low-income individuals is related to the expansion of public transit options. However, this fails to take into account that the majority of trips made in the US are by private car (Blumenberg, 2004; Sanchez et al., 2003; Waller, 2005). Numerous studies have attempted to quantify the potential benefit that access to a vehicle could provide to the family or individual. Cars offer flexibility in trip making, a benefit for the household, especially if women, who often have multiple responsibilities, head the household. Owning a car decreases commute times which can open up hours for more employment or simply open up employment opportunities previously unavailable. Vehicles open up the geographic area available to individuals/families for housing and employment (Blumenberg, 2004). Any previous job attendance problems resulting from unreliable public transit could also be resolved, assuming the vehicle is reliable. In addition to flexibility, cars improve housing options and employment opportunities while providing safety outside normal schedules (Sheller, 2004; Goldberg, 2001; Pendall et al., 2014). In a national study, twice as many welfare recipients with access to cars were working than those without cars. Similarly, 25% more low-income families with access to cars were working, compared to those without access (Ortega). Finally, in a study by the Urban Land Institute families with car access found housing in neighborhoods with social and environmental qualities that exceeded the quality found by families without access to a car. Of note in that study was that families with cars felt safer in their neighborhoods and were less likely to live in neighborhoods with high crime rates. The study found that over time families with access to a vehicle experienced less exposure to poverty and were less likely to return to a high-poverty

neighborhood. While individuals may gain access to employment and housing through vehicle access, the neighborhoods are also most likely to be less walkable and experience lower transit availability (Pendall et al., 2014).

Despite the advantages of car ownership, the pitfalls that accompany car ownership also limit the accessibility of the family to services and amenities. The costs of car ownership are two-fold: the initial purchase and the ongoing operational costs. Once a family gets over the hurdle of saving for the initial investment of purchasing a vehicle, operational costs (gas, maintenance, insurance) are cited as prohibitive (Waller, 2005). The AAA calculates that the average costs for car ownership total to $6,100 (AAA, 2015). Low-income individuals are also more likely to have a less reliable car and pay more for that car over its life (Garasky, 2006; Waller, 2005). The car is more likely to be an older and cheaper model in need of repairs, and that may also be subject to higher insurance premiums. Insurance costs for young or new drivers can be higher, as well as for areas that are considered high risk. Adding to the costs, it is also estimated that cars spend 95% of their lives parked, which when parking fees are considered makes car ownership an investment that could be better spent.

CAR SHARING MEMBERSHIP

The most obvious benefit of membership in a CSO that proponents and users highlight is the cost and financial savings a carshare membership can provide to an individual or family (Ortega; Duncan, 2010; Shaheen et al., 2009; Goldberg, 2001; Pasquarelli, 2008). An individual has access to a vehicle and all the benefits it provides. Members do not need to worry about the costs of maintenance, insurance, gas, or parking as these are all covered by the carsharing organization (Kim, 2015). Depending on the system, the member can also gain access to a variety of vehicles; trucks, SUVs, cars, that

can fit the need of the day. The improved mobility and accessibility afforded to an individual is also a benefit that can open up opportunities to employment, housing, and health previously unattainable. Benefits at a community level have also been discussed in the literature, with focus on reduced Vehicle Miles Traveled (VMTs) and reduced environmental pollution (Ortega). Studies from Washington D.C. describe reduced vehicle usage by as much as 50%. Zipcar has asserted that its users of car-sharing systems are more likely to sell their old car or delay purchasing a new car. Community-level benefits also include the removal or private vehicles from the road system. Shaheen asserts that each carshare vehicle added to the fleet removes 9-13 private vehicles from the road, a number "amazingly consistent" globally (DeMorro, 2014). San Francisco's City CarShare has found that:

> "1) since joining the CSO, 30 percent of CSO members sold one or more of their privately owned cars; 2) 67 percent of members chose not to purchase an additional car; 3) overall automobile travel among members dropped 47 percent; 4) the use of public transportation, walking, and bicycling by members increased; and 5) these changes created a savings of 13,000 VMTs, 720 gallons of gasoline, and 20,000 pounds of carbon dioxide emissions (City CarShare 2004)." – Ortega, *Car Sharing in the United States*

Proponents of carshare systems also point to the environmental/community benefits that can come from reduced use of personal vehicles, improved air quality, increased transit ridership, less congestion (Pasquarelli, 2008; Katzev 2003). The development of carshare organizations in cities can create a sustainable transportation system by connecting carsharing individuals to the transit, biking, and walking options in the local transport network (Duncan 2011). There are also members of CSOs who forgo the purchase of a vehicle, or sell their personal vehicle (Katzev, 2003). Membership in a CSO has been purported to result in less miles driven, especially in European markets. However in the US, while the number of miles driven seems to have mixed results from CSO

membership, there are positive results with alternative transit options. The resulting numbers show mixed results for those using transit, but those walking, driving, and carpooling increased (Katzev, 2003; Martin & Shaheen 2011).

LOW-INCOME INDIVIDUALS & CAR SHARING ORGANIZATIONS

Barriers to system usage by low-income communities can be divided into two main areas, structural and financial (Kodransky & Lewenstein, 2014; Kim, 2015).

Structural issues include the physical accessibility of the system. Share systems (bike and car) are rarely placed in locations that are walkable or a reasonable distance from places frequented by low-income individuals. Siting decisions can depend on which actor is making the decision, government versus private company. While the government may want higher usage rates from mixed-use denser urban environments, companies could base their decisions on profit and risk reduction, despite the finding that demand for carsharing low-income neighborhoods does not differ from demand in typical carsharing locations (Kodransky & Lewenstein, 2014; Kim, 2015). A second structural barrier includes logistical access, with two of the main issues being Internet access and possession of a drivers license. Access to a carshare system, and in some cases ride-share systems, is contingent on having a drivers license. Previous research has shown that license suspensions disproportionately impact low-income individuals and that lack of a license overwhelmingly impacts immigrant communities (Kodransky & Lewenstein, 2014; Priya & Uteng, 2009; Lopez, 2004-2005; Mounts, 2003-2004). The second point, of Internet access, relates to the way users participate in the system. Most reservations are done online, and even applications for the system are completed online. While there is a growing use of smart phones among low-income individuals, access to Internet can still remain a logistical hurdle (Kodransky & Lewenstein, 2014; Sommers, 2015). Illustrating

the growth of smartphone ownership, as of 2015 64% of Americans report owning a smartphone. Adults living in households making $75,000+ have the highest ownership rate (84%), and 50% of those living in households making less than $30,000 also own a smartphone. Indicative of the possible problems low-income individuals could face in a carshare system using an online reservation system, 44% of low-income smartphone users report having their phone service lapse at some point due to financial issues. Additionally, low-income individuals rely on lower-cost subscription plans, which only cover the individual. 13% of Americans who live in households making less than $30,000 are considered internet dependent, meaning they do not have access to a broadband connection in the home and limited options for internet access (Smith, 2015).

The financial status of the family/individual also hinders access to the carshare system. User costs of the system include one-time and recurring fees, which can price out individuals (Kodransky & Lewenstein, 2014; Ortega). An initial lump sum payment can be out of reach for some individuals and families. Access to bank accounts is also considered a hurdle. Approximately 17 million Americans in 9 million households, roughly 1 in 12 households, are part of the "unbanked" population (Kodransky & Lewenstein, 2014). Unbanked individuals are outside the formal banking system, meaning they do not have a checking or savings account. Banking institutions might not be a good fit for low-income households, with the main impediments being high user fees and irrelevant services. Minimum bank balances, overdraft protection, and return-check penalties are examples of services/fees that would impede use of a banking institution, preferring instead of a check-cashing outlet, like supermarkets (Ortega et al., 2010). Many carshare systems require the listing of a credit/debit card on file with the member in case of property loss or fees. Lack of cards prevents individuals from signing up for the share system (Sommer, 2015).

The least defined type of barriers are what Kodransky & Lewenstein call the "informational and cultural barriers." The existing literature provides a superficial level of exploration.

There currently are some strategies that organizations use to increase car ownership that could be extended to increase participation in carshare systems. Some states have provided funds directly to low-income families for the purchase of a car (Goldberg, 2001). If the funding is a grant the family does not have to worry about repaying the loan after just securing a job. These cars can act as "starter cars" for families allowing them to connect to work and educational opportunities and save up for a more reliable car. In addition to direct funding, some states have previously used TANF funds for loans for car purchase or repair. Loans have some drawback however that could result in a family making loan payments instead of performing consistent maintenance on the car. Beyond loans and direct transfer programs some efforts focus on helping with other car-related costs, such as the insurance and maintenance of the car (Goldberg, 2001; Ortega). Car donation programs also operate in a numerous cities across the nation that connects low-income residents with reliable used cars. Local carsharing systems have also attempted to incentivize use among low-income individuals in a number of ways. Some systems have subsidized the annual membership fee as in Buffalo while others like City CarShare in San Francisco only require eligible participants to pay half-off usage fees. Local government has also played a role in incentivizing both use and siting of carshares in their jurisdictions. Denver has stipulated that should a carshare system like to use spots in attractive areas of town, like downtown, they are required to also site vehicles in low-income neighborhoods or opportunity areas. This can include siting at affordable housing developments or local colleges and universities (Kodransky & Lewenstein, 2014; Ortega; Ithaca CarShare, inc., 2011). Further exploration into

individual CSOs efforts at increasing participation by low-income individuals is covered in the subsequent case studies.

"SHARING" VERSUS "OWNING"

Public discussion of the impacts of automobile use in recent decades has focused on the effects they have on humans and the built environment, with major topics including the loss of public space, decentralized urban development, and health outcomes (Sheller, 2004). Rarely is the car, as a possession and extension of the self, explored. Nor are the feelings that come with car ownership explored. This extension of self to one's possessions is important in understanding views of carsharing, as rather than acquiring a car its use is being acquired (Bardhi & Eckhardt, 2012). The preference for car ownership as a measure of wealth and success also warrants exploration as a potential barrier to the use of carsharing.

The underlying premise of the sharing economy is that one only pays for the access to a service for a period of time (Bardhi & Eckhardt, 2012; Vine & Polak, 2015; Richardson, 2015). This can be seen in services like Netflix, AirBnb, and Uber, which offer its users the benefits of access to services, without the hassle associated. Some authors have argued that ownership is no longer the "ultimate expression of consumer desire" (Chen, 2009; Bardhi & Eckhardt, 2012). Instead, access to goods and services, which one pays for as used, is preferred. This can be seen in various markets like the entertainment industry with Netflix and the automotive industry with carsharing systems and transportation network companies.

While the sharing economy in itself creates a community loosely based on trust, this trust is required before face-to-face interactions (Richardson, 2015). This anonymity results in an access-based economy, but not an economy of sharing (Bardhi & Eckhardt,

2012). Sharing implies joint ownership of the asset, whereas access indicates no transfer of ownership, just simple access to the asset (Richardson, 2015; Bardhi & Eckhardt, 2012). This anonymity and subsequent lack of perceived ownership results in a degree of indifference to the physical asset, and its well-being. This is a phenomenon not found when a possession is understood as "mine" and clear feelings of ownership are present (Kleine et al., 1995; Belk 1988; Richins, 1994). Carshare users have been found to be resistant to efforts at community creation. Additionally, users have illustrated a preference for ownership, with carsharing being a temporary solution until a later time when car ownership is possible (Naughton et al., 2014; Bardi & Eckhardt, 2012). Observers of the carsharing economy point to the lag in purchasing of cars by millennials as proof that ownership remains the ideal. Bardhi & Eckhardt, in a study of Zipcar users found repeated instances of preference for ownership. Users framed the shared car as a temporary solution as a result of their current socio-economic status. This failure to create a community around access to an object also resulted in the failure of these users to see themselves as owners of the vehicles. This lack of ownership manifested itself in various ways, most notably in the careless behavior of Zipsters when using the zipcars. This illustrates a disconnect between access and ownership that carsharing has failed to bridge. Were this a system that was about sharing an object, as Zipcar and other systems attempt to create, users would perceive themselves as holding joint ownership, and would maintain and display these vehicles as part of their extended selves (Belk 1988, Belk, 2007; Kleine et al., 1995; Richins 1994; Sheller, 2004).

Appreciation for the emotional connection people have with their possessions, in this case cars, is required to help create a sense of ownership and community. This understanding of the emotional connection will help to promote the social sustainability of the formal carsharing system. A preference for ownership might prevent the sharing

economy from becoming a primary form of transportation. However, the benefits a private car provides to low-income individuals should encourage programs to be developed that remove a major cost from low-income family budgets, car ownership.

Chapter 3: Brief History & Background

Car sharing in its current form began in Europe in the 1980s. The European Car Sharing Association (ECS) was created in 1991 and is an umbrella organization for over 40 operators in 5 countries. The largest and oldest carsharing systems are located in Switzerland and Germany, with 25,000 and 4,000 members respectively (Shaheen et al., 2009). The United States experience with carsharing has been more limited, but since the 2000s has seen rapid expansion. The first two carsharing systems that were documented in the US began in the early 80s in Indiana and California, but ceased operations in the late 80s. The late 1990s saw the expansion of carshare systems in the US, primarily on the West Coast (Ortega; Kim, 2015). As of January 2014 there were over 1.2 million car share members in the US, accessing over 17,000 vehicles across 24 operators (Kodransky & Lewenstein, 2014) These range from the small non-profit to the national/international for-profit company. And according to the Shared-Use Mobility Center there are more than 400 cities across North America with an operating carsharing system (Shared-Use Mobility Center).

Users rent a car for a limited period of time, usually for short-medium distance drives for a specific purpose. The fleet of shared cars can vary from single model vehicles to multiple model vehicles. Car2Go is an example of a CSO that has only one vehicle model, a Smart Fortwo. In contrast, Zipcar's fleet consists of cars, hatchbacks, vans, and trucks, providing members a greater array of vehicle options. Renting can be done online, over the phone, or using a smartphone app. Depending on the system there is usually an annual fee as well as a fee for length of time used or distance traveled. These fees cover

insurance, fuel, roadside assistance, and maintenance, which the company takes care of instead of the user.

There are four major types of carshare systems--round-trip, one-way, peer-to-peer, and fractional:

Round-trip – These systems consist of reserved spaces for cars, where the it must be returned to its starting location within the allotted appointment time. Multiple vehicle options are often available for users: trucks, SUVs, cars, etc. An example of a round-trip model is the for-profit company ZipCar. This type of system provides security to low-income users by confirming when and where vehicles will be available for pick-up. If the reserved spaces are in strategically sited areas, membership use can be increased. Multiple vehicle options also allow members to tailor the reservation for their need, making the system more appealing to users.

One-way – These systems consist of a catchment area where cars can be picked up and dropped off in any parking location. The catchment area often encompasses a city center and surrounding neighborhoods. Generally a single model of vehicles is available for users. Car2Go is an example of a one-way system. This system offers flexibility to users, allowing them to perform a trip without the hassle of returning the vehicle to a designated spot. However, to ensure the vehicle is still available after the destination is reached, the user would have to continue the reservation, increasing costs, to make the return trip. In addition, the lack of flexibility in vehicle models limits the trips that can be made.

Peer-to-peer – In this system residents rent out their private vehicles for a period of time as a way to supplement their income. The vehicle must be returned to the starting location within the allotted appointment time. This system differs from the two previously described, in that the CSO only facilitates the interaction

between car owner and car renter. The CSO does not typically own the car or handle upkeep. This system would allow low-income users to add to their income by renting out the car when not in use by the owner. However, the owner would still be liable for the operating costs of the vehicle and would forego use of that vehicle at certain times, making the system unlikely to be widely adopted.

Fractional – This model allows the users to co-own a car and share the accompanying costs and use. This system came to light late in the research process and as such there is limited information on this type of system.

Of the above types described, round-trip is the most widely used system among community-based CSOs and provides the greatest benefit to low-income users. By allowing users to reserve a vehicle from a specific location for a specific time users are guaranteed a vehicle will be available. The type of vehicle can also be specified, giving users flexibility in the errands they can complete; reserving a truck for moving, a hatchback for grocery shopping, a van for carpooling. While a one-way system could provide benefits in the form of greater numbers of vehicles spread across a larger geographic area, there is no guarantee a vehicle will be available at their location or time of need. Finally, peer-to-peer's reliance on owners paying for the operational costs would not remove the cost hurdle low-income individuals face when owning a car. From the standpoint of costs and flexibility, round-trip systems offer the greatest possible benefits to low-income individuals.

Transportation Network Companies (TNCs), of which Uber and Lyft are the most well known, are not explored. TNCs use an online app, typically through smart phones, to connect drivers and passengers. The drivers use their private vehicles to chauffeur customers using a varied pricing scheme. Similar to taxis, the costs of a trip are prohibitive for low-income users. Due to their operation as a private vehicle chauffeur

service, through app-based tech services, and their limited opportunities for low-income individuals, TNCs are not explored.

Chapter 4: Methodology

CASE STUDIES

CSO	Location	United States	Status	Low-Income Program
Buffalo CarShare	Buffalo NY	Yes	In Active	Yes
Capital CarShare	Albany, NY	Yes	Active	No
Car To Go	Apsen, CO	Yes	Active	No
Carpingo	Brooklyn, NY	Yes	Active	No
Carrot	Mexico City, Mexico	No	Active	N/A
CarShare HFX	Halifax, Canada	No	Active	N/A
CarShare Vermont	Montpelier, VT	Yes	Active	Yes
City CarShare	San Francisco, CA	Yes	Active	Yes
Communatuo	Montreal, Canada	No	In Active	N/A
Community Car	Madison, WI	Yes	Active	No
eGo CarShare	Denver, CO	Yes	Active	Yes
eThos CarShare	Golden, CO	Yes	Active	No
Evo	Vancouver, Canada	No	Active	N/A
HourCar	Minneapolis, MN	Yes	Active	No
Ithaca CarShare	Ithaca, NY	Yes	Active	Yes
Los Angeles Leading by Example	Los Angeles, CA	Yes	In Development	Yes
Modo	Vancouver, Canada	No	Active	N/A
Ogo CarShare Co-op	Kelowna, Canada	No	Active	N/A
Peg City Car Co-op	Winnipeg, Canada	No	Active	N/A
Saskatoon CarShare	Saskatoon, Canada	No	Active	N/A
Vrtucar	Ottawa, Canada	No	Active	N/A

Figure 1: List of considered CSOs and respective criteria scoring.

The seven case studies selected are geographically dispersed across the United States. Geographic diversity was desired in selection to highlight the broad trends across the US, control for regional differences, and compare effective best practices. Three CSOs were cursorily examined in a report on shared mobility: Buffalo CarShare, City CarShare, & eGo CarShare. These three provided the foundation for exploring and comparing other CSOs who had low-income participation components. A search of each CSOs website as well as search of the Car Sharing Association's website resulted in a list

of over 20 individual CSOs across the United States. Each was examined to see if they had a specific program targeting low-income individuals or general strategies for participation. From that initial list an additional two were selected: Ithaca CarShare and CarShare Vermont due to their subsidized membership programs. The partnership between the City of Los Angeles and the Shared Use Mobility Center came up later in the research process. Its focus on low-income and disadvantaged neighborhoods, inclusion of carshare opportunities, and collaborative development of the system resulted in its addition. Los Angeles also offered an example of a current effort that from the onset is striving for full participation from low-income individuals, and illustrates the exciting mobility work coming out of LA and Southern California. Finally, as a springboard for future discussion of Austin, the CapMetro MetroRideShare program was explored. This local program provided a basis for consideration of how best practices identified could be brought to the Austin area.

Each of the above systems' website was explored for information related to brief histories, member demographics, details on current low-income programs, overall success of the system, and future endeavors. Relevant local news sites were searched for information on the history and the operation of the CSOs. Internal and external reports were explored to understand the details of the CSO, from member demographics and user rates, to usage trends over years and funding sources. Finally, each of the websites for the CSOs was investigated for any relevant information: usage rates, membership numbers, vehicle fleet, vehicle location, member testimonies, member handbooks, annual reports, etc. The level of detailed information available through each website varied, but external reports and internal informational handouts added to the information gathered.

The Location Affordability Index, US Census, and American Community Survey were used to provide context information on the cities and residents where the CSOs

were located. Population figures from the 2015 estimate are pulled for each of the principal cities the CSOs are based in. The 5-Year estimates of the 2012 & 2014 American Community Survey provide information on the number of workers 16+ years of age or older located in the principal cities as well as the percentage of workers who lack access to a vehicle as a means of transport to work. Finally, the Location Affordability Index provides information on the percent of income individuals can expect to spend on transportation costs. The Index allows users to search information on individual geographies for eight distinct family profiles – defined by household income, size, and number of commuters. Each principal city was searched through the database using the classification "Working Individual."

Finally, the potential cost savings low-income individuals could experience by switching from car ownership to carsharing are calculated. The websites of operating CSOs contained information on usage rates and membership fees, with Denver providing a side-by-side comparison between ownership versus sharing. Because of their responses to the Questionnaire (Appendix A) and the provided information on their website, Denver's assumptions were selected for use in calculating each CSOs annual membership cost. Assuming what Denver eGo CarShare considers regular use, four 2-hour trips and four 4-hour trips per month, the annual costs were calculated for each CSO, factoring in its respective usage rates and any monthly/annual membership fees. The calculated costs are compared to the findings from the Location Affordability Index using the same income-level to figure out what percentage of income will be dedicated to costs of transportation. These findings are located at the end of the chapter.

KEY INFORMANT INTERVIEWS

Each of the above programs, minus Los Angeles, was contacted for a brief interview through email or phone. Solicited information included eligibility criteria established by the CSO for low-income programs, best practices of the CSO, and recommendations for the successful establishment of future community-based CSOs (See Appendix A). Outreach by email and phone was conducted. Denver's eGo CarShare was the only CSO who responded to inquiries, and their responses are located later in the study as part of the Case Study exploration.

Due to the limited response from CSOs further exploration included review sites and blogs about the selected systems. Additionally, reports at the state or federal level that chronicled the CSO were reviewed. Review sites provided minimal anecdotal evidence on the benefits of carsharing, in contrast to the CSOs respective websites that highlighted members' stories and thoughts about the system. External state level reports on Ithaca, Buffalo, Los Angeles, and San Francisco provided greater information for the report.

Chapter 5: Case Studies

Six of the seven case studies are carsharing endeavors; with one being an in-development collaborative project between a city & a public-interest organization, and another CSO that is no longer active. Each has promoted, to varying degrees, involvement by low-income individuals. The first three (San Francisco, Denver, Buffalo) were selected using research that has already highlighted these programs. The second three (Ithaca, Vermont, Los Angeles) were selected through further online exploration into CSOs to identify those specifically focused on serving low-income individuals. The final program is Austin, Texas' CapMetro MetroRideShare program. While not a CSO in the form explored in this paper, it is included due to their existing involvement in the sharing economy and the possibilities for further involvement.

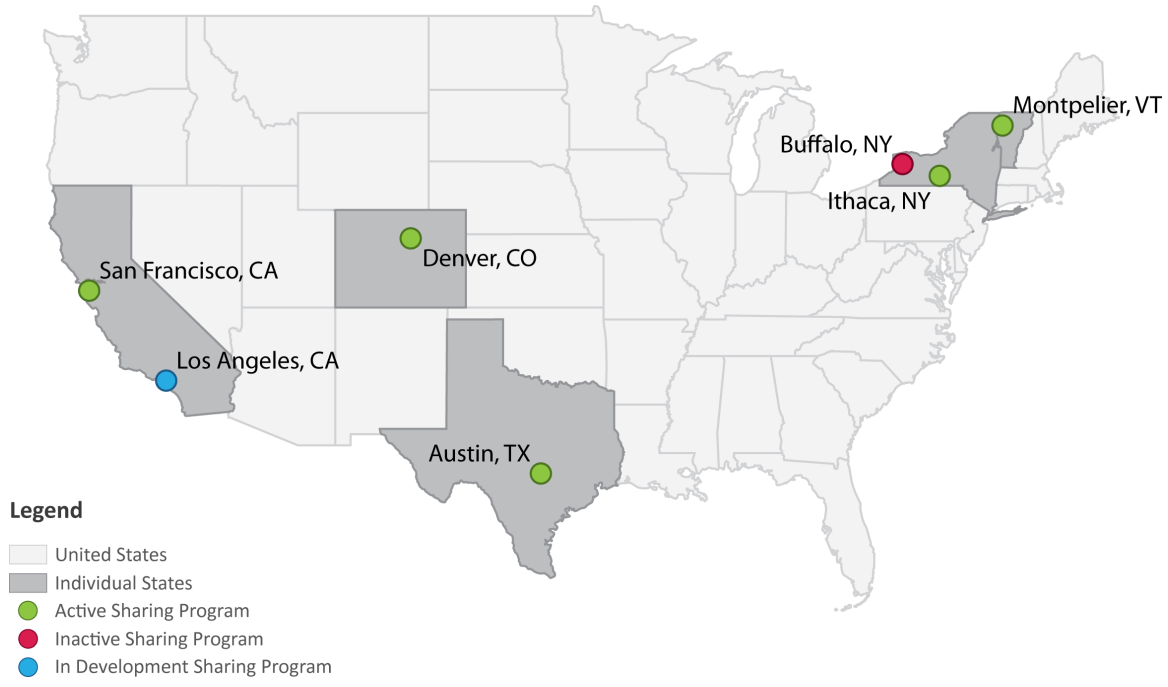

Figure 2: Location of selected sharing programs.

SAN FRANCISCO CITY CARSHARE

Figure 3: San Francisco's City CarShare logo.

According to the most recent Census and American Community Survey (ACS) data the city of San Francisco reports a population of 864,818 persons, with a median household income of $78,378 (US Census Bureau, 2015). Of the 436,841 workers recognized in the ACS 2012 5-Year Estimate, 89,703 (20.55%) were recognized as having no access to a vehicle in their means of transportation to work. Workers who had access to one car numbered 161,105, roughly 36.88% (ACS, 2012 5-Year Estimate). Comparing this data to another database, a working individual, identified as someone who makes $38,592 annually by the Location Affordability Index, spends roughly $5,000 dollars (13%) of their income on transportation. A working individual could be expected to report 9,067 vehicle miles traveled (VMT) annually (Location Affordability Portal, 2016). Within this context City CarShare has developed a model that predominantly serves moderate-income non-traditional households.

City CarShare is located in San Francisco, California. It began operation in 2001 with funding from the Federal Highway Administration. City CarShare began through the collaboration of diverse individuals like environmental activists, economic developers, bicycle groups, and neighborhood activists (Metcalf, 2015). Organized as a non-profit, the roll out of City CarShare had the support of city government, local transit agencies, and businesses. Three funding sources were identified to support City CarShare:

charitable donations, contracts with public agencies, and loans, with the most successful approach being a refundable member deposit. Over 400 vehicles are available to members across 12 cities across the Bay Area. Options include cars, hatchbacks, pick-ups, SUVs, and minivans, with fuel-efficient, hybrid, and wheelchair-accessible vehicles available within the fleet as well. From last available data, membership rose to 3,800 in mid-2005. The system is a round-trip CSO, with vehicles located at PODs, points of departure, across the city (San Francisco City CarShare).

At last survey, members were found to be split evenly across gender lines. However, the majority of members (77.1%) self-identified as White, with no other group surpassing 10% of members. Surveys also found that the median income of members was reported as $50,000 annually, representing a moderate-income non-traditional household market. As of 2005 the largest numbers of members were concentrated in areas of the city with the most constrained and expensive parking, central and northeastern San Francisco. There is some overlap with areas facing gentrification pressures, especially eastern San Francisco and the Berkeley and Oakland areas. The top trip purposes recorded by members included shopping, social/recreational uses, and personal errands (Cervero, 2007).

City CarShare actively participated in regional outreach and engagement efforts to recruit low-income users, such as partnering with CalWorks, a California welfare program that provides services to eligible needy families (Kodransky & Lewenstein, 2014). Funding from the Metropolitan Transportation Commission, through their Low-Income Flexible Transportation program, funded 300 subsidized memberships over 3 years beginning in 2003. Users were offered subsidized memberships, and in some cases eligible individuals paid no application fee, no monthly fee, no deposit, and half-off usage rates (Ortega). LIFT utilized JARC, State Transit Assistance (STA), and

Congestion Mediation and Air Quality (CMAQ) moneys to fund the program (Ortega). As of this writing, there was no information available from the City Carshare website or the CalWorks website on current or future programs (California Department of Social Services). City CarShare also partnered with San Francisco Working Families credit program in 2010. The program offered eligible members discounted membership and driving rates, however as of this writing no information was available on current or future promotions (Working Families Credit).

As of 2015 City CarShare had partnered with Carma, a ride-sharing service founded in 2007 that connects people with similar commutes to share the cost of the trip and reduce congestion. The purpose of the partnership was to "bring a wider breadth of mobility options to the San Francisco Bay Area," but had plans to remain a non-profit with an outreach program to low & moderate-income individuals (San Francisco City CarShare).

Early in the CSO's history, City CarShare appeared to have an active outreach component to low-income individuals. Through community partnerships that specifically targeted low-income eligible individuals, they were pursuing a strategy that recognized the multiple obstacles that prevented low-income individuals from participating. Despite their outreach, only 300 subsidies were provided over three years, a small percentage of the 4,000 memberships reported in 2005. While subsidies were offered and the CSO developed relationships with community organizations it doesn't appear City CarShare specifically targeted POD siting or provided any alternative means for payment that would disproportionately benefit low-income residents. For a proper assessment of the CSO more up-to-date information is needed regarding the programs they have offered to low-income individuals, like whether they were continued past the initial three years, and an evaluation of how the partnership with Carma has changed the organization.

DENVER EGO CARSHARE

Figure 4: Denver's eGo CarShare logo.

The principal city of Denver reports a population of 682,545 people with a median household income of $51,800 (US Census Bureau, 2015). The ACS 2012 5-Year Estimate indicates there are a total of 309,127 workers over the age of 16 in Denver. Of these, 16,614 (5.37%) report no access to a vehicle and another 96,778 (31.3%) report access to only one vehicle. The Location Affordability Index reports that the average working individual (annual income = $31,204) can expect to spend 18% of their income on transportation costs, roughly $5,600. This translates to 12,289 VMTs that the average working individual can expect to travel annually (Location Affordability Portal, 2016).

Denver eGo CarShare agreed to complete the Questionnaire for professionals from CSOs (Appendix A). Responses are included throughout this case study in addition to previous research. eGo CarShare is located in the Denver metro area, and serves the cities of Denver and Boulder. It began operation 1998 as Little Red Car Co-op, but by 1998 had incorporated as a Colorado non-profit, Boulder CarShare. It rebranded again in 2009 as eGo CarShare to bring expanded service to Denver. The system offers its members access to over 40+ vehicles throughout locations in Denver, Boulder, and Longmont. eGo CarShare's fleet is 33% more fuel efficient than the national fleet and includes trucks, minivans, cars, and hatchbacks (eGo CarShare). Similar to City CarShare the system is round-trip and with vehicles located at specific stations across the city.

eGo CarShare has performed outreach to low-income individuals since July 2014 (Van Soest & Worminghaus, 2016). As of 2016, 22% of members reported incomes less than $20,000 annually, while 17% reported annual incomes between $20,000-$34,999. One strategy adopted by the CSO includes strategic siting of vehicles in low-income neighborhoods, usually within ¼ mile. Members who live in these low-income neighborhoods are charged rates 50% lower than normal rates and have their membership fee reduced. Outreach components include consistent and active marketing and promotion through flyering, door-to-door education, and occasional mailings. They also have a low-income transportation toolkit available to qualifying individuals (eGo CarShare). Officially called the Affordable Housing Transportation Toolkit, it offers members discounted carshare rates, subsidized transit passes through metro Denver's Regional Transportation District, and free/discounted B-Cycle memberships. Income qualifying members are determined using the income thresholds adopted by the housing authorities eGo CarShare partners with. eGo CarShare has also attempted to reach low-income individuals by offering a Lonation Program where low-income car owners can add their private vehicle to the carshare fleet. This allows their vehicles to be used in a peer-to-peer format, where the owners supplement their income. In exchange eGo handles maintenance and insurance for the vehicles, and credits are made available to the owner to be used on any vehicle in the fleet (Kodransky & Lewenstein, 2014). Despite this outreach eGo CarShare reports that work toward educating potential participants on the benefits of carsharing and tackling of negative perceptions remains important. eGo CarShare also works with volunteers to distribute material in an appropriate language, in this case Spanish.

According to member surveys the top trip purposes/activities performed by members include personal errands, work trips, moving, and social/recreation activities.

The average trip lasts 3-5 hours in duration (Van Soest & Worminghaus, 2016). Members report increased flexibility in schedules and the ability to absorb unexpected vehicle issues through their access to share vehicles. Members also highlight access to specific vehicles that match tasks at lower cost rates than traditional rentals as a benefit while contributing to a healthier environment.

The City of Denver has also promoted carshare use by low-income individuals. The City of Denver incentivizes siting in low-income neighborhoods and also offers prime parking spots, like spots downtown, to carshare providers (Kodransky & Lewenstein, 2014). Recently eGo has begun siting carshare vehicles in proximity to other transit system connects, creating "hubs." These hubs allow users to or the ability to access multiple options: rail, bus, carshare, bicycle, Denver bikeshare, or walking.

Denver's subsidized membership, strategic siting, and transit partnerships would fit well with low-income resident needs. By siting vehicles in low-income neighborhoods eGo CarShare removes a physical barrier to participation, and by combining multiple modes of transit into hubs they provide multiple mobility options for flexibility. eGo CarShare also provides other passes at subsidized rates, which can further assist low-income residents. Their active approach to outreach and multi-pronged strategy for options available to low-income residents shows a desire to provide carsharing to low-income residents. Denver's response to the questionnaire provided some insights about the organization, however an external report on the progress of the system could shed more light on demographic make-up of members, trip purposes, and funding options.

BUFFALO CARSHARE

Figure 5: Buffalo CarShare logo.

Buffalo, NY reports a city population of 258,071 people according to 2015 census estimates. The median household income was recorded at $31,668 in the ACS 2012 5-Year Estimate. Workers over the age of 16 numbered at 102,704, with 14,373 (14%) reporting no access to a vehicle in their transportation to work. Another 40,006 (38.95%) reported access to only one vehicle (ACS 2012 5-Year Estimate). Low income working individuals in the city, defined as someone who makes an average annual income of $24,786, can expect to spend 23% of their income on transportation. This amounts to roughly $5,701 annually. Annually, 12,701 VMTs can be expected from the average working individual. Within this context, Buffalo CarShare was able to create and sustain a system that performed active and significant outreach to low-income residents. This resulted in a national reputation as a successful CSO with an above average membership comprised of low-income individuals.

Buffalo CarShare (BCS) is mentioned multiple times in previous research and news articles as an example of a success story regarding their outreach to low-income individuals in the City of Buffalo (Kodransky & Lewenstein, 2014). The development of BCS was a result of an entrepreneurship competition entry by four students from the University of Buffalo. Despite losing the competition the students and some community members started the service in 2009 with four cars and 30 members using $125,000 from

state agencies. As of 2015 over 900 individuals had subscribed to the system and it boasted 19 vehicles, including minivans, pick-up trucks, and hybrid/electric vehicles. Vehicles were located across the city in a variety of locations, including churches, small businesses, and apartment complexes.

BCS reported that they served a diverse range of members across racial, age, and income lines. Two-thirds of their membership reported median incomes below $35,000, and over half reported incomes below $25,000 (Galligano, 2015; Meyer 2015). BCS's membership also included members of the lowest income bracket, 66% of BCS members reported they could not afford a vehicle, while 50% of their members self-identified as people of color (Meyer, 2015). Twenty-eight percent of their members reported ages over 50 years while 27% reported ages under 30. Additionally, only 10% of their members were students, indicating that BCS had succeeded in promoting itself to low-income Buffalonians.

Specific outreach strategies by BCS included siting vehicles on affordable housing properties, and also at local employers such as the Buffalo State College, and the Buffalo Niagara Medical campus. BCS has also partnered with non-profit organizations, the local transportation authority, and the metropolitan planning organization. Through these connections BCS had been able to receive marketing opportunities on transit lines and transit stops, and identify possible funding options. In a sign of understanding that some individuals might not have access to a bank account BCS allowed members to pay with money orders (Sommer, 2015).

Members reported being able to replace $30/hour taxi-rides with $8/hour carshare rentals, strengthening BCS' claim of saving its members over $377,000 on transportation expenses (Kodransky & Lewenstein, 2014). Additionally a report from 2011 estimated that 34% of their members had either sold their private vehicle or decided not to get a car,

an example of the environmental and financial benefits of carsharing. Members also reported an increased flexibility in their schedules, with a diverse range of purposes satisfied through membership: 82% of members use the CSO for social/recreational purpose, 85% of members use BCS for grocery access, 75% of members used it to access medical care, and 46% used BCS to get to a job interview (Meyer, 2015).

In 2015 BCS was forced to cease operations after being unable to renew their insurance. The for-profit company Zipcar acquired them later that year. Zipcar's expansion into the Buffalo market reused a number of previous BCS vehicle sites, including the Medical Center and local colleges. It is unclear what other sites were reused in this fashion or if the sites remain accessible to low-income individuals. BCS members were also allowed to waive the annual Zipcar membership fee if they decided to shift to Zipcar services (Drury, 2015).

Buffalo CarShare provided similar services to low-income residents that both previous CSOs did as well. Their strategy included strategic siting, community partnerships, and reduced usage fees. In addition to these main strategies BCS was the first CSO explored that allowed members to pay with a money order. This signals a cursory understanding of the systemic issues low-income individuals disproportionately face, specifically those who could be considered unbanked. Overall members reported satisfaction with the system. BCS targeted multiple issues in their outreach strategy, structural and financial, which helped make them one of the most successful CSOs. Because of the reputation BCS had developed as a successful CSO there was more information available publicly through reports and articles than expected. However, unlike Denver or San Francisco they did not have a website with information centrally located.

ITHACA CARSHARE

Figure 6: Ithaca CarShare logo.

Ithaca, NY is the smallest of the cities explored. With a population of 30,788 people, Ithaca reports a median household income of $30,318 (US Census Bureau 2015, ACS 2014 5-Year Estimate). The ACS 2014 5-Year Estimate shows that 9,565 workers over the age of 16 are reported in the city. Of this total, 1,363 (14.25%) report having no access to a vehicle, and 4,096 (42.82%) report having access to only one vehicle. Ithaca shares similarities with Buffalo, NY when looking at the percentage of income devoted to transportation costs and low-income working individual annual incomes. The Location Affordability Index shows that an average low-income working individual (annual income = $25,270) can expect to spend 23% of their income on the costs of transportation. This amounts to $5,812 annually and 12,504 miles traveled annually (Location Affordability Portal, 2016). Ithaca's CSO has developed into a system reflective of their college town context, with major trends and strategies a result of the large number of student members.

Ithaca CarShare was created in 2006 but did not start operations until 2008 when they obtained insurance. It is upstate New York's first independent carshare organization. It operates across Ithaca, and offers its members a range of fuel-efficient vehicles for use. Its seed funding was covered by a grant from the New York State Energy Research and Development Authority (Ithaca CarShare, Inc., 2011). As of 2014 Ithaca CarShare had 24

vehicles and over 1,500 members. Vehicles available for use by members are more fuel-efficient than standard vehicles, and numerous choices are offered including compact and mid-size hatchbacks, a pickup truck, and a minivan. While the CSO covers fuel costs, an efficient vehicle fleet can cut operational costs as well as provide environmental benefits. In an attempt to create a sense of ownership among the community, each of the vehicles is named after an important local or national figure that highlights their respective histories. The system is considered a round-trip type of CSO.

A report available that chronicles the first two years of the Ithaca CarShare's operation shows a system that experienced steady increases in membership and use, with periodic declines due to the academic year (Ithaca CarShare, Inc., 2011). Reflective of its context as a college town, Ithaca College and Cornell University, the system reports that 1/3 of its users are students, 1/3 are faculty/staff, and 1/3 are non-college residents (Stein, 2014). The majority of users are between the ages of 20-34. While its members are across income brackets, 20% of members make between $20,000-$39,999 annually, and 25% make below $10,000 annually. However, due to the large presence of students in the area it is unclear how many low-income individuals make use of the system. The highest use of the system is in the Spring and Fall seasons, also reflective of the system's college campus context. The racial breakdown of Ithaca CarShare members reflects that of the City of Ithaca, with 70% of the users self-identifying as white. As of 2010, 27% of users lived within ¼ mile radius of a carshare location and 37% lived within ½ mile radius. Available on their website, Ithaca CarShare also estimates that on average for every shared car in their fleet, 15.4 cars are removed from the road. However, how this is calculated is not explained.

After the one-time application fee, members choose from one of two plans depending on their expected use of the system, the *Just In Case* plan or the *It's My Car*

plan. Cornell University and Ithaca College offer its students and faculty/staff discounted use of the system. There is also a subsidized membership to qualifying individuals through federal Job Access and Reverse Commute (JARC) funding, in the form of their *Easy Access* program. Income-qualified members include those eligible for Medicaid, Family Health Plus, free or reduced price school lunch, food stamps, or those who meet the maximum income limit of 150 percent of the Federal Poverty Level. Through this program, members do not pay the application fee, receive monthly credits that roll over, and pay a reduced monthly membership fee. Ithaca Carshare has also attempted to site vehicles in areas that service low-income residents.

Ithaca Carshare has also established partnerships with the City of Ithaca, Cornell University, and Ithaca College to provide accessible parking spots for users. Recognizing possible obstacles facing low-income individuals, Ithaca CarShare has streamlined its physical paperwork process as well as partnering with a credit union that allows individuals to deposit funds into a special account linked to their carshare membership (Ithaca CarShare, Inc., 2011).

The strength of the Ithaca Carshare is the partnership with the credit union to develop a special account for payment. However, while it continues the pattern of reduced membership costs the previous CSOs have implemented, a weakness of the system is the limited partnerships with community institutions. The partnerships with the universities provide a small form of strategic siting for users, however it's limited to students. Another related weakness is the high percentage of student members, the overall system could promote itself better to non-student residents. Information about the CSO was available through an external state report, providing detailed information that the previous CSOs discussed were lacking.

CARSHARE VERMONT

Figure 7: CarShare Vermont logo.

Burlington, VT is also one of the smaller cities explored in this paper, reporting the second lowest population with 42,452 people (US Census Bureau, 2015). The median household income from the ACS 2014 5-Year Estimate for Ithaca comes in at $42,745. 19,602 total workers are also reported in the ACS. Of these, 1,230 (6.27%) reported having no access to a vehicle and 6,434 (32.82%) report access to only one vehicle. When defining low-income working individuals, the Location Affordability Index shows an average annual income of $30,802. These individuals can expect to spend 21% of their income on transportation costs, amounting to $6,468. In addition, the annual VMTs for a working individual amount to 13,756 miles. Within this context, CarShare Vermont has developed a system comprised of a large number of people under-35 years of age, most likely reflective of their partnerships with local institutions of higher education.

CarShare Vermont launched in 2008 as the first carshare organization in New England with 8 vehicles in the City of Burlington (GrowSmart Maine Transportation Forum, 2016). It was founded as a non-profit that "[strives] to provide an accessible and affordable service that reduces overall car use while improving mobility for people of all income levels." The system, considered a round-trip type, expanded into Winooski in 2013 and Montpelier in 2015. CarShare Vermont currently boasts over 1,000 members. Carshare members have access to 18 vehicles at 15 locations across the three cities of Burlington, Montpelier, and Winooski. The locations, known as 'pods,' house at least one

vehicle, which is accessible by all CarShare Vermont members: a reservation can be made online or by phone. Vehicles available to members include hatchbacks, sedans, a truck, and a minivan (CarShare Vermont). Similar to Ithaca CarShare the vehicles are named in an attempt to foster a sense of ownership and community among members.

From the last survey available, CarShare Vermont reported that 63% of members had either sold one of their private vehicles or had forgone buying an additional vehicle. Eighty-seven percent of members reported being a member of a 0-1 car household. 50% of members are also under the age of 35 (GrowSmart Maine Transportation Forum, 2016). Forty-six percent of members reported more instances of walking and biking, and 36% reported taking public transit more often. Remarkably 83% of members reported a less than 10 minute walk or bike ride to their preferred pod (CarShare Vermont). CarShare Vermont, similar to Ithaca CarShare, also reports that each carshare vehicle has helped reduce about 15 cars from the road. This estimate is reported on their website, but lacks information as to its calculation. As a metric of results that benefit the community and environment, CarShare Vermont reports a reduction in CO2, miles driven, and hours behind the wheel.

Marketing and outreach strategies include door-to-door campaigns and social media campaigns, which could explain the high percentage of members under-35 years of age. Partnerships have also been developed with local institutions of higher education. Both Champlain College and the University of Vermont provide subsidized memberships to their students, faculty, and staff by covering the costs of the annual membership (University of Vermont & Champlain College). The above strategies could be indicative of the high percentage of users under 35.

Subsidized memberships are also provided for income-qualifying individuals and families on a first-come first-serve basis through their *Mobility Share* program. To

qualify, individuals' and families' household income cannot exceed 60% of median income. Qualified individuals pay a reduced application fee, have the membership fee waived for 12 months, pay the lowest driving rates, and have access to transportation planning and budgeting assistance. Qualifying members also participate in program evaluation and regular check-in meetings. However, despite the positives of the program, a hindrance could be the requirement of a debit/credit card for automatic payments. Twenty-five of these memberships were made available for 2016 (CarShare Vermont).

Compared to the previously discussed CSOs, CarShare Vermont provides the least options. CarShare Vermont only provides reduced user costs to low-income residents, the only possible strength of the system. A lack of active outreach and strategic siting provides limited opportunities for low-income residents to participate in the system. While the recognition of the prohibitive user costs that low-income residents might face has resulted in subsidized memberships, this CSO needs to expand their strategy to create a successful low-income program. Overall, more information publicly available like demographic make-up and funding options through internal or external reports on the system would help make a proper assessment in terms of mobility needs. A focus on the perceptions of the system by low-income users would also provide greater insight.

"LOS ANGELES LEADING BY EXAMPLE"

Figure 8: Shared-Use Mobility Center logo.

Los Angeles is the largest city explored in this paper. As of the 2015 US Census Bureau estimate, the City of Los Angeles reported a population of 3,971,883 people. The ACS 2014 5-Year estimate shows a median household income of $49,682. The ACS also shows the number of workers in the city amounts to 1,759,932 people total. 125,300 people (7.12%) report having no vehicle to travel to work, and another 499,919 (28.4%) report having access to one vehicle. The Location Affordability Index shows that the average low-income working individual makes $30,292 annually. They can expect to spend 18% of their income on transportation costs, amounting to $5,453. Working individuals can also expect to drive 11,332 miles annually. While the system is still in development, it offers the most potential for low-income residents. Its focus on community partnerships and phased expansion in low-income communities could promote appropriate strategies.

Despite Los Angeles's well-known affinity for the private vehicle, recent efforts at transit expansion, bicycle improvements, and development of a walkable downtown indicate LA is changing its mobility strategy. Currently there are over 500 carshare vehicles across the Los Angeles metro area available through Car2Go, Zipcar, and Getaround. Additionally, providers at the airport allow flyers to rent out their vehicle to visitors. This existing system will be complimented by the addition of 100 vehicles as part of a pilot program through SUMC, which will help fill some of the gaps that exist.

The Shared-Use Mobility Center (SUMC) is a public-interest organization that promotes collaboration in shared mobility and connects transit agencies, cities, and communities across the nation. It assists with pilot programs, conduct research, and provide advice in the hopes of broadening the benefits of shared mobility to all.

The SUMC is partnering with the City of Los Angeles to launch a carsharing pilot program targeted specifically at low-income individuals and families. The project is made possible by two bills that direct the California Air Resources Board to invest cap-and-trade revenue in neighborhoods disproportionately impacted by climate change. State cap-and-trade revenues fund the $1.6 million three-year pilot project to introduce electric carsharing vehicles, and accompanying charging stations, in disadvantaged communities (Shared-Use Mobility Center, 2015). The pilot program will further the Sustainable City Plan in reducing emissions, improving air quality, and increasing mobility options. The City of Los Angeles will handle recruiting carsharing companies to take part in the program, while the Department of Water and Power will handle installation of the charging stations (Sklar, 2015).

According to project statements and press releases, 100 hybrid or electric vehicles and more than 100 charging stations will be sited in disadvantaged communities in neighborhoods in central, south, and east L.A. Neighborhoods highlighted as receiving initial focus include Westlake, Pico-Union, Boyle Heights, and Koreatown, known as LA's Promise Zone. The Promise Zone is a collective impact project that aims to target resources to create jobs, boost public safety, increase educational attainment, and provide better housing opportunities by transparent and innovative decision-making. Most residents in these neighborhoods rent and work low-wage jobs, meaning any savings these families can experience would help stabilize their situations (Spector, 2015). Its aim is to recruit 7,000 new carsharing members, which is expected to result in the selling of,

or avoidance of purchasing, 1,000 private cars, which will reduce gas emissions by 2,150 metric tons of CO2 annually. The previous estimates are provided by SUMC, however no explanation for the methodology used to calculate them are provided. SUMC will assist in locating where to site vehicles, creating pricing structures that benefit low-income users, and building community support (Perez & Baldonado, 2015; Share-Use Mobility Center, 2015).

Community organizations and grassroots outreach will play a key role in designing the operation of the carshare. Recognized organizations that have already committed to implementing the program include Coalition for Clean Air, La Mas, Korean Immigrant Workers Alliance, T.R.U.S.T. South L.A., and Natural Resources Defense Council (Senator Kevin de León Website). Possibilities include a multi-lingual call center for reserving cars, and changing the structure to accommodate individuals without smart phones, Internet access, or bank accounts (Hanley, 2015).

The system has the most potential to meet the needs of low-income residents because of the nature of the inception of the project and its funding. The emphasis on community partnerships and its rollout in low-income neighborhoods should result in proper vehicle siting, appropriate pricing strategies, and consistent marketing and education. If the organization provides alternative ways to pay, in addition to reduced fees, it will be an example of a successful case study, surpassing BCS. Assuming the CSO will follow a round-trip model and provide multiple models of vehicles it will also offer the flexibility the previous CSOs provide to their members. Continued research on the progress of the project rollout will illustrate the success or failure of the strategies and opportunities for CSOs and low-income residents.

CAPMETRO METRORIDESHARE PROGRAM

Figure 9: Capital Metro logo.

The City of Austin is the second-largest city explored in this paper. Its 2015 estimated population was 931,830 people with an estimated median household income of $55,216 (US Census Bureau, 2015). The ACS reports the number of workers in the city at 460,814. Of this total, 16,216 workers (3.52%) report having no access to a vehicle for transportation to work. An additional 138,241 workers (30%) report having access to only one vehicle (ACS 2014 5-Year estimate). Working individuals, defined by the Location Affordability Index as an annual income of $29,823, can expect to spend 21% of their income on transportation costs. This amounts to $6,263 and 13,968 annual miles traveled. Austin does not currently have a community-based CSO, however a number of for-profit CSOs operate and CapMetro runs a rideshare program.

The Capital Metropolitan Transportation Authority, CapMetro, is Austin's regional public transportation agency. While CapMetro does not have a carshare program it does operate a rideshare program, indicating the agency has some familiarity with the formal sharing economy and could act as a partner in any future community-based CSOs. CapMetro's service area includes 7 municipalities outside the City of Austin, however the program operates across Central Texas in multiple municipalities.

The program began operation in 1998; and it currently operates in Central Texas, both inside and outside the CapMetro service area. Current rideshare routes span Central Texas, with routes including the municipalities of Waco, Killeen, Temple, Bastrop, La Grange, Georgetown, Round Rock, Pflugerville, San Marcos, New Braunfels, and San

Antonio (vRide). Eligible groups of 5-12 riders sign-up for a month-to-month lease agreement. Similar to carshare, the program covers the cost of insurance, maintenance, fuel, and roadside assistance. The cost of participating in the program varies according to the type of vehicle, distance traveled, size of the group, fuel costs, and tolls. The more members available in a rideshare group, the cheaper the cost. Subsidies are also provided to help cover the cost of the month-to-month membership (CapMetro). Subsidies are available for those living both inside and outside the CapMetro service area. Commutes that begin and end in the CapMetro service area receive a $500 monthly subsidy, while commutes that begin or end inside the service area receive a $450 monthly subsidy (CapMetro).

Benefits championed by the agency include savings in terms of money and time, and the elimination of 4-11 vehicles off the road for each group. These numbers are roughly consistent with research by Shaheen that indicates carshare vehicles remove 9-13 vehicles from the road. As of February 2016, the program boasted 200 vanpools, a record number of participating employers for the agency. The 200th vanpool employer was Intel, and as part of their involvement has the greatest number of vanpools, at 16. Over 102 employees take part in the 16 vanpools. Overall membership in the program doubled from 2014 after the rideshare program expanded to out-of-service area commuters.

CapMetro's surface level involvement in the sharing economy indicates their multi-pronged approach to providing diverse transportation options to residents. However, the described program has limited opportunity for low-income residents of Austin. The program appears to focus on employment centers that enjoy structured hours and high numbers of employees in relatively concentrated residences. The system would not benefit single users who would need a vehicle for short distance/time trips, or those with employment in odd hours. While CapMetro could provide the springboard for a

future CSO, the services would need to be tailored for the types of trips taken and the population served. However, CapMetro could take advantage of its community partnerships and relationships with other Austin institutions.

CONCLUSIONS

The programs previously described illustrate a variety of responses non-profit CSOs have taken to serving the needs of low-income residents in their respective systems and facilitating their participation. All recognize that finances are a barrier to usage by low-income individuals, and so provide subsidized memberships to users. However, select CSOs went beyond simply providing lower costs and provided other services that attempted to meet the needs of low-income individuals. Through strategic siting, like Buffalo CarShare, CSOs can place share vehicles within walking distance of the users that would most benefit, removing a physical barrier. Providing materials in multiple languages, like Denver, removes the language barrier that isolates immigrant communities. Finally, since multiple types of vehicles are available in their fleets, each of the CSOs offers low-income users the flexibility of making unique trips. All of the systems described in this report provided base information on their websites, but further information would have been helpful; basic history of the system, number of vehicles and stations, membership numbers, and any annual reports the CSO completes.

There is also significant cost-savings potential by switching from ownership to carsharing. Each of the calculated annual costs of membership in the respective CSO halve the expected percentage of income devoted to transportation (Figure 12). While rates are not available for BCS or Los Angeles, and the Austin system is not applicable for calculation, there are significant savings in the remaining four.

CSOs differ in the strategies they use to encourage low-income participation. From subsidized memberships to strategic siting, CSOs have a number of options available to them. Each strategy targets different barriers to participation, with the majority of strategies focused on physical and financial barriers.

CSO	Location	Began Operation	Status	# Members/ # Vehicles	System Type
City CarShare	San Francisco, CA	2001	Operating	3,800 members/ 400 vehicles	Round-trip Multiple vehicle models
eGo CarShare	Denver, CO	1998	Operating	Unknown/ 40+ vehicles	Round-trip Multiple vehicle models
Buffalo CarShare	Buffalo, NY	2009	Ceased Operations	900 members/ 19 vehicles	Round-trip Multiple vehicle models
Ithaca CarShare	Ithaca, NY	2008	Operating	1,500 members/ 24 vehicles	Round-trip Multiple vehicle models
CarShare Vermont	Burlington, VT	2008	Operating	1,000 members/ 18 vehicles	Round-trip Multiple vehicle models
LA Leading by Example	Los Angeles, CA	Pending	Pending	7,000 members/ 100 vehicles	Round-trip Multiple vehicle models
Metro RideShare	Austin, TX	1998	Operating	200 Vanpools	Round-trip SUVs & Vans

Figure 10: Summary of CSOs

CSO	Strategies/Programs to Address Structural Barriers	Strategies/Programs to Address Financial Barriers
City CarShare	CalWorks Partnership Workers Credit Program Partnership	300 Subsidized Memberships (3 Years) Waived Application Fee Waived Membership Fee 50% Lower Driving Rates
eGo CarShare	Strategic Siting City of Denver Partnership Denver Housing Authority Partnership Boulder Housing Partners Partnership Material in Appropriate Language	Low-Income Toolkit Waived $25 Application Fee 50% Lower Driving Rates Lonation Program
Buffalo CarShare	Strategic Siting Buffalo State College Partnership Buffalo Niagara Medical Campus Partnership Local Transportation Authority Partnership Metropolitan Planning Organization Partnership Centrally Accessible Physical Office	Payment by Money Order
Ithaca CarShare	City of Ithaca Partnership Cornell University Partnership Ithaca College Partnership Streamlined Paper Application Process	Waived Application Fee Reduced Membership Fee $15 Monthly Credit w/Rollover Payment through Special Credit Union Account
CarShare Vermont	Champlain College Partnership University of Vermont Partnership	Half-off Application Fee No Annual Membership Fee Lowest Driving Rates
LA Leading by Example	Strategic Siting Community Partnerships Multilingual Call-Center	Reduced Membership & User Fees
Metro RideShare	Unknown	Monthly Subsidy

Figure 11: Summary of CSOs' respective strategies

CSO	Percent of Avg. Annual Income Spent on Transportation (Participating in a CSO)		Percent of Avg. Annual Income Spent on Transportation (Owning a Car)	
City CarShare San Francisco, CA	$2,599	6.73%	$5,017	13%
eGo CarShare Denver, CO	$2,424	7.77%	$5,617	18%
Buffalo CarShare Buffalo, NY	Rates Unavailable		$5,701	23%
Ithaca CarShare Ithaca, NY	$2,294	9.10%	$5,812	23%
CarShare Vermont Burlington, VT	$2,760	8.96%	$6,468	21%
LA Leading by Example Los Angeles, CA	N/A		$5,453	18%
Metro RideShare Austin, TX	N/A		$6,263	21%

Figure 12: Expected costs of transportation between carsharing versus ownership for low-income working individuals.

Chapter 6: Discussion

COMPARISONS

Carsharing has the potential to provide benefits to low-income individuals and efforts to increase participation should be pursued. While each of the explored CSOs targeted low-income individuals, the success of the outreach varied. They all had some form of subsidization program that provided low-income individuals with reduced memberships or usage fees. However, financial strategies alone are not the only way to promote low-income usage.

Community partnerships that inform decision-making and provide insight into the needs of low-income individuals are essential to low-income program success. Both Buffalo CarShare and San Francisco City CarShare provide the best examples of partnerships with community institutions. However, the institutions highlighted in the research show that Buffalo CarShare partnered with institutions like affordable housing complexes and higher education campuses, while City CarShare partnered with low-income serving agencies like CalWorks and the Working Families Credit program. Both types of partnerships helped the CSOs provide services to low-income individuals, either by siting vehicles appropriately or targeting needy individuals. Other partnerships are also essential, those that will educate potential members, plan an efficient transportation system, and address systemic issues. Most CSOs partnered with local transit agencies, which provide opportunities to market their services and provide educational material for users. Partnering with regional planning organizations provides opportunities to promote an effective regional transit system and provide services to gap areas. Finally, partnerships with local banking institutions, formal and alternative, can remove a

systemic barrier facing low-income members, lack of formal banking services. While San Francisco and Buffalo provided the best example of community partnerships, Los Angeles could prove to be the best example of the described CSOs once the system is rolled out.

Beyond subsidizing costs of memberships, CSOs need connections with local community institutions that can highlight specific needs and provide transparent decision-making. Siting of vehicles, payment and application processing, marketing and educating to potential members can all be designed to actively encourage low-income membership.

LIMITATIONS

An assumption underlying this paper and the framing of subsequent questions is that the formalized sharing economy will continue to expand as a phenomenon in the United States. The sharing economy has grown considerably in the last decade, with AirBnb. Netflix, and Zipcar as prime examples of the diverse services offered. It has grown in part thanks to the effects of the recession, with many people postponing the purchase of vehicles and homes. Critics however, have questioned the sustainability of such a system, especially as the economy recovers and millennials move from collaborative consumption to ownership. Current efforts and endeavors need to continue to be explored as cities and people react to their introduction into the economy.

Sharing is also not a new phenomenon. A limitation of this paper is the lack of discussion of the informal sharing economy. It has occurred at the neighborhood and community level for decades. The Montgomery Bus Boycott is a prime example. After choosing to boycott the bus system, a community-initiated and managed rideshare program was established to ensure residents had transportation (HISTORY.com). Los Angeles is also the site of “colectivos” and informal ride-sharing arrangements that serve

low-income residents (Ohland, 2015). To more fully understand how the needs of low-income residents might be met, it would be important to also consider existing informal sharing initiatives.

Austin was the first city in Texas with carsharing services (Zhou & Kockelman, 2010). This study does not delve into the operation or history of the first local CSO, Austin Carshare. Fully understanding the context of the CSOs creation and demise would provide guidance for any future community-based or City CSO in the Austin area.

Competition from for-profit companies was touched on minimally in this study, but it has led to the closure and acquisition of non-profit carshares. Austin's original carsharing organization, Austin CarShare, ceased operations in 2010 after a 3 ½ year run. One reason cited by board members was the introduction of Car2Go into the Austin market. At last count in 2008, prior to closure in 2010, membership had risen to 200 people and the system boasted 5 vehicles, sited in Downtown Austin, the University of Texas campus, and Hyde Park neighborhood. While Buffalo CarShare's closure was a result of failing to acquire insurance, its acquisition by Zipcar indicates greater research is needed to understand the dynamics between for-profit and non-profit CSOs.

Finally, the calculations for potential cost-savings from switching to sharing are based on general assumptions. The average reservation time and miles traveled needs to be calculated for each CSO, instead of utilizing one CSOs' averages for all case studies. Also, while these costs are compared to the Location Affordability Index' transportation costs, the calculated cost of participation does not include other transportation expenses related to other modes that would be used if reliant on a CSO. Neither do the calculations reflect the trend that vehicle miles traveled decrease when a resident becomes a member of a carshare.

DIRECTIONS FOR FUTURE RESEARCH

One direction research should continue to push is outreach to low-income communities. Continued engagement with those most impacted by the costs of car ownership can result in solutions for non-profit and for-profit companies in targeting larger communities. Connecting CSOs with grassroots organizations that provide services to these communities is one other way of gaining greater understanding of the local transportation challenges and opportunities facing Austin residents. Questions that further investigate perceptions of ownership will illustrate the emotional attachment vehicles hold to some people, and by extension the importance of appreciating the vehicle's role in people's lives.

Additionally, analyses should continue to be performed on existing CSOs, both for-profit and non-profit. Information on membership numbers, travel types, demographic information, and usage patterns will point out where the system is succeeding and failing. It will also allow for comparisons to be made between non-profit versus for-profit companies, especially as for-profit companies acquire or push out local non-profit companies. This will be especially useful in the case of Buffalo CarShare. After being acquired by ZipCar, BCS expressed hope in maintaining their commitment to their low-income members. While ZipCar also expressed interest, a review of the company in a couple of years would be telling.

Finally, research should continue to examine the sharing economy. As more and more services continue to fall under the umbrella of the sharing economy it is important to gauge how equity and inclusiveness are created and maintained in the system. The barriers to access faced by low-income individuals require active strategies that affirmatively engage these communities. Who has access to these systems is a central question that must be answered if the benefits of the sharing economy are to be realized.

Chapter 7: Recommendations for Austin

The following recommendations are general strategies that can promote usage by low-income communities, such as Austin's, as well as possible funding streams to make these efforts viable. These deal with issues at a local or regional level and are drawn from the literature review and case study research.

CONTINUING RESEARCH

Analysis of current Austin CSOs: Austin currently boasts two major CSOs, Car2Go and Zipcar, which are both for-profit international companies. A better understanding of where and whom they serve will showcase the successes and shortcomings of the current systems. Demographic data, ridership numbers, and trip data would highlight demand and supply across the Austin area and deepen our understanding of the existing transportation system.

Report on Austin CarShare (ACS): A detailed look into Austin CarShare (now defunct) can also provide the context needed to understand the failures and successes of Texas' first car sharing system. While a number of Professional Reports and journal articles have explored ACS, no report has been created that provides a holistic and systematic look at the history of the CSO.

STRUCTURAL STRATEGIES

Physical Office: A central office located along major transit routes and easily accessible by possible users can allow in-person reservations during business hours and visibility to possible future members. BCS reported that 1/3 of their members made first contact with the CSO in person.

Strategic Siting: One approach Denver eGo CarShare and Buffalo CarShare have taken to promote usage by low-income individuals is strategic siting of carshare vehicles. Buffalo CarShare placed carshare vehicles on college campuses and near affordable housing units. In Denver, local officials promoted siting in opportunity areas by providing downtown parking spaces. Siting carshare vehicles in the locations most frequented by targeted users removes one physical barrier to access. Possible locations for siting in the Austin, Texas area include CapMetro park & rides and transit centers, HACA affordable housing, and higher educational centers (University of Texas, Huston-Tillotson, Austin Community College), community institutions (libraries, churches, community/recreation centers), and major employment centers that are difficult to access via public transit.

Transit Education: CSOs, transit providers, and local governments can promote the concept of carsharing. Transit providers and community organizations already have educational components that educate community members on the resources available to them. Design a comprehensive and collaborative outreach strategy for promoting carsharing across the Austin area that takes advantages of the networks and expertise of Austin's non-profits. Highlight the cost-savings of carsharing versus car ownership and the reliability of the shared vehicle fleet. Materials should be available in appropriate languages, like in Denver's eGo Carshare Spanish language material.

Partnerships w/ Social Service and Community Organizations: Partnering with organizations located in the community can provide CSOs with information needed to better understand the issues facing individuals. Organizations that would be beneficial to contact and build a relationship with include social service

& welfare organizations, to connect directly with possible users, and community organizations to take advantage of existing neighborhood connections and networks. Examples include community development corporations, refugee services, HACA, and community recreation centers. San Francisco's City CarShare provides two examples of partnering with social service agencies; CalWorks and the Working Families Credit program to target low-income individuals.

Partnerships w/ Transit Providers: Partnering with the local or regional transit provider in the area can help encourage integrated transportation planning, especially if the transit provider is already familiar with some form of share service like ride-share or carpools. CapMetro's existing rideshare program offers an example of such a starting point. Integrating carsharing into the development of their 5-year strategic plan and service plan updates.

Planning Collaboration: Collaborating across agencies with CSOs in planning can help in the creation of a comprehensive plan for the transportation system for the city/region. CSOs work best when seen as a complement to the public transit system, capable of filling gaps and expanding the reach of the system. Examples in the Austin area include CapMetro and the Capital Area Metropolitan Planning Organization (CAMPO). Since CAMPO already analyzes areas considered Environmental Justice areas, consider alternative transit options that could be operated.

FINANCIAL STRATEGIES

Subsidized Costs: Multiple CSOs provide subsidized membership and lower usage fees for individuals who qualify. These programs set eligibility

requirements, some through household income-levels, and provide clear processes for reaching low-income individuals. Lowering or removing the initial membership fee, as well as lowering the hourly/mileage fee, can remove a financial barrier to access. Institutions of higher education can promote student usage and subsidize memberships for faculty, staff, and students. CSOs have turned to federal funding (Ithaca Carshare w/JARC funding) and state funding, (City CarShare w/ State Transit Assistance funding and Los Angeles w/ cap-and-trade revenue). Income can also be generated by user fees.

Partnerships w/Financial Institutions: Collaborate with the financial services that low-income individuals frequent, such as free check-cashing services found in supermarkets to provide a way for individuals to set up a payment process. Providing a means for those who are unbanked to cover the set up a payment process can include special bank accounts and paying by check/money order. Ithaca Carshare provides an example of partnering with a local credit union to establish a secure form of payment. Local credit unions and supermarkets (HEB and Fiesta) that perform financial services are potential partnerships.

Job Access and Reverse Commute (JARC) Funding: The Federal Transit Administration provides grants to communities to fill gaps in the transportation system, specifically with the purpose of promoting employment.

Appendix A: Interview Guide for Professionals

Questionnaire

Date of Interview:
Method of Interview (email, phone, Skype, etc):
Name of Organization:
Name & Position of Interviewee:

When was your organization founded?

How long has the organization performed outreach to low-income families?

What income threshold does the organization recognize as low-income?

What percentage of your users are considered low-income?

What specific strategies or methods are used to perform active outreach to low-income families? Strategic-siting, funding, subsidies, etc.?

What funding streams does your organization have?

What obstacles has your organization faced from outside actors (State, City, private competition, etc)?

What partnerships have you made with city, regional, state, federal, non-profit actors?

What are the major issues preventing full participation from low-income communities?

What benefits to the user does your organization recognize that are a result of carsharing?

How do you quantify these benefits? (Example: cash savings from no maintenance)

On average, when users use carshare what types of trips are most often taken? (work, recreation, health, etc)

On average, what is the length of time for a trip?

What recommendations do you have for starting a local carsharing organization?

Do you have any recommendations of other car sharing organizations with a low-income outreach component?

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